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eye observation, L[1] greater than the least sensibility of photographic plates, we have M. von Gothard's case with the *Lyra* star; and since the possibility of the existence of such stars may be also proved theoretically, M. von Gothard's opinion that there might be found still more of these interesting objects may easily be verified during the general photographic survey of the heavens.

Budapest: January 12, 1888.
Meteorologische Centralanstalt.

Spectroscopic Results for the Motions of Stars in the Line of Sight, obtained at the Royal Observatory, Greenwich, in the year 1887. No. XI.

(*Communicated by the Astronomer Royal.*)

The results here given are in continuation of those printed in the *Monthly Notices*, vol. xxxvi. p. 318, vol. xxxvii. p. 32, vol. xxxviii. p. 493, vol. xli. p. 109, vol. xlii. p. 230, vol. xliii. p. 81, vol. xliv. p. 89, vol. xlv. p. 330, vol. xlvi. p. 126, and vol. xlvii. p. 101. The observations were made with the "half-prism" spectroscope, one "half-prism" with a dispersion of about 18½° from A to H being used throughout. A magnifying power of 14 was employed.

The cylindrical lens has always been used in front of the slit as in the observations made previously to 1881 and since. The observations of the Moon and of the sky have been made as a check on the general accuracy of the results.

The day specified in the first column is the civil day, and the hour is that of Greenwich civil time, commencing at Greenwich mean midnight, and reckoning from 0 to 24 hours.

The observations were made by Mr. Maunder throughout.

Motions of Stars in the Line of Sight in Miles per Second, observed with the Half-prism Spectroscope.

(+ denotes Recession; − Approach.)

Date. 1887.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Meas.	Concluded Motion of Star. Estimd.	Remarks.
						α Andromedæ.		
		h						
Sept.	1	0	2	F	− 9·2	−23·0	−26·0	Spectrum fairly steady.
Oct.	14	23	2	F	+ 2·5	− 5·9	− 7·1	Spectrum steady but rather faint.
	19	21	2	F	+ 3·9	−26·1	−26·8	Definition fair.
	21	22	4	F	+ 4·5	−24·2	−25·1	Spectrum fairly steady.
						β Cassiopeiæ.		
Oct.	19	22	2	F	− 1·5	+ 7·9	+ 7·6	Measures very rough.

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Date. 1887.		h	No. of Meas	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Meas.	Concluded Motion of Star. Estimd.	Remarks.
						γ Pegasi.		
Sept.	1	0	4	F	− 8·7	−22·7	−23·2	Definition fair.
Oct.	14	23	2	F	+ 4·3	−25·9	−27·2	Measures made with great difficulty.
	19	21	2	F	+ 5·7	−20·6	−21·0	Spectrum faint but steady.
						α Cassiopeiæ.		
Oct.	19	23	2	F	− 2·2	+13·9	+11·3	Observations made with great difficulty.
Nov.	1	0	2	b_1	+ 0·5	+58·8	+55·7	Definition fair.
						β Ceti.		
Oct.	28	23	2	b_1	+ 9·8	−67·0	−66·4	Spectrum faint and tremulous.
						γ Cassiopeiæ.		
Feb.	16	20	6	F	+12·0	+ 1·7	− 1·9	Star-line seen with difficulty. Measures rough.
Oct.	19	23	2	F	− 3·4	−17·1	−21·0	Star-line faint and broader and more diffused than usual.
						β Andromedæ.		
Oct.	28	23	2	b_1	+ 1·9	+31·7	+26·4	Spectrum bright but tremulous.
Nov.	1	0	2	b_1	+ 2·8	+26·7	+27·9	Definition fair.
						β Arietis.		
Oct.	21	22	2	F	−1·4	+48·8	+51·7	Definition fair.
						γ Andromedæ.		
Feb.	16	20	2	F	+16·1	−13·4	−12·8	Star-line faint.
Nov.	1	0	2	b_1	− 1·2	−19·8	−19·2	Star-line faint.
						α Arietis.		
Oct.	15	0	2	F	− 4·7	− 0·5	− 4·4	Spectrum and star-line faint.
	21	22	4	F	− 2·6	+20·0	+25·5	Measures very rough.
	28	23	4	b_1	− 0·3	+ 2·2	+ 5·0	Spectrum bright but tremulous.
						α Ceti.		
Oct.	28	23	4	b_1	− 2·4	+ 0·9	+ 2·4	It seems clear that the edge of the dark fluted band in this star is not the b_4 line. Assuming the observations of the b_1 line to be correct, the wave-length of the edge of the band, corrected for motion of earth and star, will be $\lambda = 5162·63$, Ångström's value, 5166·88, for b_4 being assumed.
	29	0	2	b_4	− 2·4	−137·1	−168·0	

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Date. 1887.	h	No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
					Meas.	Estimd.	
β Persei.							
Jan. 26	22	4	F	+16·6	−90·0	−93·7	Definition bad.
28	20	4	F	+16·8	−16·5	−13·0	Definition poor.
31	20	5	F	+17·0	−18·4	−17·0	Definition bad.
Feb. 2	23	4	F	+17·1	−108·6	−105·2	Definition poor.
15	23	6	F	+17·4	−51·0	−49·0	Definition poor.
16	20	6	F	+17·4	−44·0	−40·9	Definition poor.
Oct. 20	0	4	F	− 8·1	−51·4	−52·8	Definition fair.
21	22	4	F	− 7·6	−81·3	−63·2	Definition good.
24	23	4	F	− 6·8	−38·7	−25·7	Definition fair.
α Persei.							
Feb. 16	20	4	F	+16·3	−12·4	−11·3	Star-line of Procyon type.
Oct. 20	0	2	F	− 9·0	−26·9	−27·6	Definition fair.
21	23	2	F	− 8·6	−55·5	−53·1	Definition variable.
24	23	2	F	− 7·9	−42·4	−39·9	Definition fair.
Aldebaran.							
Jan. 28	21	2	F	+16·4	+20·8	+29·3	Definition poor.
Feb. 16	21	2	F	+18·4	+24·9	+29·1	Definition fair.
Oct. 15	1	2	F	−13·5	+47·5	+47·1	Star-line seen with difficulty.
20	1	3	F	−12·4	+47·7	+49·3	Definition poor.
22	1	4	F	−11·9	+43·4	+49·6	Definition poor.
25	0	2	F	−11·1	+60·8	+54·6	Definition poor.
29	0	4	b_1	−10·1	+42·2	+45·7	Definition poor.
Capella.							
Jan. 26	22	4	F	+12·6	+ 3·8	+ 8·1	Definition fair.
Feb. 16	0	2	F	+15·9	+18·5	+20·3	Definition poor.
Oct. 22	0	4	F	−13·5	+52·3	+52·7	Definition good.
25	0	4	F	−13·0	+38·4	+41·9	Star-line seen well occasionally.
29	1	4	b_1	−12·1	+52·7	+60·3	Star-line seen with difficulty.
Rigel.							
Jan. 27	0	2	F	+12·7	+14·5	+18·9	Star-line very faint.
31	21	2	F	+13·5	+23·9	+10·8	Definition fair.
Feb. 3	0	2	F	+13·8	+13·5	+12·7	Measures rough.
12	22	2	F	+15·0	+ 1·0	+ 1·7	Definition poor.
16	21	2	F	+15·4	− 5·0	− 0·9	Definition poor.

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Date. 1887.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
		h				Meas.	Estimd.	
Oct.	20	1	2	F	−12·0	+32·4	+36·4	Definition poor.
	22	0	6	F	−11·6	+28·7	+28·8	Spectrum bright but tremulous.
	25	0	2	F	−11·1	+45·7	+37·2	Definition good.
γ Orionis.								
Jan.	31	22	2	F	+14·4	−23·7	−21·7	Definition fair.
Feb.	12	22	2	F	+16·3	+26·2	+26·0	Definition fair.
	16	22	4	F	+16·8	−12·6	−12·9	Definition fair.
Oct.	22	0	2	F	−13·8	+ 8·7	+ 9·3	Definition good.
	25	1	4	F	−13·3	+16·5	+17·6	Spectrum bright but tremulous.
β Tauri.								
Jan.	31	22	2	F	+14·6	−24·5	−21·9	Cloud passing.
Feb.	16	22	2	F	+17·2	−10·0	−10·5	Definition good.
Oct.	22	0	4	F	−14·7	−19·6	−12·3	Definition fair.
	25	1	4	F	−14·1	− 0·6	− 5·5	Definition fair.
δ Orionis.								
Feb.	16	21	4	F	+15·8	+11·4	+12·8	Definition poor.
Oct.	25	1	4	F	−13·0	+ 4·7	+10·9	Definition fair.
ε Orionis.								
Feb.	16	21	2	F	+15·6	+16·8	+18·0	Definition fair.
Oct.	25	1	2	F	−13·1	+34·5	+34·8	Definition fair.
ζ Orionis.								
Feb.	16	22	4	F	+15·4	−23·6	−20·1	Definition fair.
Oct.	25	1	4	F	−13·2	+11·7	+14·3	Definition fair.
κ Orionis.								
Feb.	16	22	2	F	+14·1	−28·4	−25·3	Star-line faint.
α Orionis.								
Oct.	29	1	2	b_1	−14·1	+69·3	+77·0	Spectrum bright but tremulous. Star-lines held with difficulty.
	29	1	2	b_4	−14·1	+77·2	+76·0	
β Aurigæ.								
Oct.	22	0	2	F	−15·0	+41·3	+41·7	Definition fair.
	25	0	2	F	−14·5	+32·4	+33·4	Definition good.

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Date. 1887.		h	No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Meas.	Estimd.	Remarks.
						γ Geminorum.		
Feb.	16	22	2	F	+14·4	−74·7	−64·8	Spectrum bright and steady.
						Sirius.		
Jan.	27	0	2	F	+ 6·0	−25·8	−27·0	Definition bad.
Feb.	3	0	6	F	+ 7·6	+12·7	+12·4	Definition fair.
	12	21	4	F	+ 9·6	−13·0	−11·3	Spectrum very tremulous.
	16	23	6	F	+10·3	− 6·8	− 7·5	Measures very rough.
Oct.	25	2	6	F	−13·6	+36·2	+34·4	Spectrum very tremulous.
						Castor.		
eb.	3	1	2	F	+ 8·0	−35·9	−36·2	Definition fair.
	16	0	4	F	+11·5	−17·7	−15·1	Definition poor.
						Procyon.		
Feb.	3	1	2	F	+ 6·2	+20·2	+20·2	Definition good.
	16	23	4	F	+10·0	−10·7	− 7·5	Spectrum very tremulous and star-line faint.
Oct.	29	3	4	b_1	−17·6	+54·0	+58·5	Star-line very faint indeed.
						Pollux.		
Feb.	16	1	2	F	+10·8	−44·4	−38·7	Definition poor.
Oct.	29	2	4	b_1	−18·0	−53·5	−51·2	Definition poor.
						Arcturus.		
July	4	23	2	F	+15·0	−43·3	−45·1	Definition poor.
	11	23	2	F	+15·2	−43·3	−44·5	Definition poor.
						α Coronæ Borealis.		
July	11	23	2	F	+11·8	+20·7	+20·7	Spectrum tremulous.
Aug.	24	22	2	F	+12·1	−32·9	−30·8	Star-line seen with great difficulty; spectrum faint; measures rough.
						α Ophiuchi.		
July	12	0	2	F	+ 6·9	−21·5	−21·0	Definition poor.
Aug.	24	22	2	F	+13·7	−43·6	−34·4	Spectrum faint; definition bad.

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Date. 1887.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Meas.	Concluded Motion of Star. Estimd.	Remarks.
						Vega.		
		h						
July	12	0	2	F	+ 0·8	−38·1	−41·5	Definition fair.
Aug.	22	23	2	F	+ 6·1	−54·0	−55·5	Definition good.
	24	23	2	F	+ 6·3	−63·1	−47·8	Definition bad.
	31	23	4	F	+ 6·9	−51·3	−58·3	Definition poor.
Sept.	2	21	2	F	+ 7·1	−47·2	−49·3	Definition good.
Oct.	10	21	2	F	+ 8·7	−55·6	−57·5	Definition fair.
	14	20	2	F	+ 8·7	−43·4	−41·4	Spectrum faint; slit narrow.
						γ Lyræ.		
Aug.	22	23	2	F	+ 6·5	−57·3	−51·8	Spectrum faint; measures rough.
						ζ Aquilæ.		
Aug.	23	0	2	F	+ 9·6	−27·1	−27·4	Spectrum faint; measures rough.
						δ Cygni.		
Oct.	10	22	4	F	+ 7·1	−25·1	−25·9	Spectrum faint; measures rough.
						Altair.		
July	12	1	2	F	− 2·9	−39·8	−40·4	Definition fair.
Aug.	23	0	2	F	+ 7·7	−53·3	−57·1	Star-line faint.
	25	0	2	F	+ 8·1	−50·3	−39·2	Definition poor.
	31	23	4	F	+ 9·7	−71·0	−63·5	Star-line very ill-defined.
Oct.	10	21	2	F	+15·7	−13·6	−15·7	Definition good.
	14	21	2	F	+15·9	−16·9	−22·8	Definition fair.
						γ Cygni.		
Oct.	14	21	2	F	+ 8·5	−29·6	−35·2	Spectrum faint; definition fair.
	31	21	4	b_1	+ 9·8	−20·3	−18·3	Definition bad; measures rough.
						α Cygni.		
Aug.	23	0	2	F	− 0·7	−43·1	−44·6	Definition good.
	31	23	2	F	+ 0·7	−47·5	−47·1	Definition fair.
Oct.	14	21	2	F	+ 6·8	−39·0	−33·5	Spectrum faint but steady.
	31	21	2	b_1	+ 8·4	−93·3	−80·8	Definition bad; measures rough.

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Date. 1887.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Meas.	Estimd.	Remarks.
ε Cygni.								
		h						
Oct.	14	21	2	F	+ 9·9	− 1·4	+ 1·5	Spectrum faint; measures rough.
	31	22	4	b_1	+ 11·5	− 11·8	− 11·5	Definition bad; measures rough.
α Cephei.								
Aug.	23	1	2	F	− 4·3	− 47·5	− 47·1	Definition fair.
Oct.	14	22	2	F	+ 1·2	− 60·6	− 58·3	Spectrum faint.
ε Pegasi.								
Oct.	14	22	2	F	+ 13·3	+ 26·5	+ 32·4	Star-line faint, but sharp.
	31	23	2	b_1	+ 16·0	+ 5·1	+ 4·4	Definition bad; measures rough.
β Pegasi.								
Oct.	28	22	2	b_1	+ 9·6	− 56·9	− 51·5	Spectrum rather faint, but definition good.
	28	22	4	b_4	+ 9·6	− 56·6	− 54·1	
	31	23	2	b_1	+ 10·3	− 20·7	− 20·5	Spectrum faint and tremulous.
α Pegasi.								
Sept.	1	0	4	F	− 4·0	− 25·9	− 29·8	Spectrum faint; measures rough.
Oct.	14	23	2	F	+ 8·5	− 5·6	− 4·0	Spectrum faint; sky clouding.
	19	20	2	F	+ 9·8	− 22·7	− 23·5	Definition fair.
	24	22	2	F	+ 11·1	− 31·3	− 32·8	Definition good.
Great Nebula in Orion.								
Oct.	25	2	6	F	− 5·0	− 12·4	− 7·4	Spectrum faint; measures rough.

Moon.

Date.			No. of Meas.	Line.	Motion Measured.	Remarks.
		h				
Jan.	31	19	5	F	+ 1·5	The coincidence of the two spectra appeared perfect.
Feb.	3	0	5	F	+ 1·6	
July	12	1	5	F	+ 0·0	
Sept.	1	0	5	F	+ 0·8	
Oct.	24	22	5	F	− 1·3	
	28	23	5	b_1	− 1·3	
Nov.	1	1	5	b_1	− 1·0	
Sky.						
Oct.	11	12	5	F	+ 5·3	Slit rather wide.
	22	12	5	F	+ 1·9	The coincidence of the two spectra appeared perfect.

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Observations of Occultations of Stars by the Moon, and Phenomena of Jupiter's Satellites, made at the Royal Observatory, Greenwich, in the year 1887.

(Communicated by the Astronomer Royal.)

Occultations of Stars by the Moon.

Day of Obs.		Phenomenon.		Telescope.	Power.	Moon's Limb.	Mean Solar Time of Observation. h m s	Observer.
1887. Jan.	5	Disapp.	*f* Tauri	Lassell Refl.	170	Dark	5 21 20·15	H. T
	5	,,	*f* Tauri	Altaz	100	,,	5 21 19·88	T.
	5	,,	*f* Tauri	N. Eq.	80	,,	5 21 20·22	C.
	5	Reapp.	*f* Tauri	N. Eq.	80	Bright	6 24 33·88	C.
	6	,,	θ^2 Tauri	Altaz.	100	,,	8 54 22·36	R. W.
	6	,,	θ^1 Tauri	Altaz.	100	,,	9 2 18·86	R. W.
	6 (*a*)	Disapp.	Aldebaran	E. Eq.	210	Dark	12 16 24·53	A. D.
	6 (*b*)	,,	Aldebaran	Altaz.	100	,,	12 24·19	R. W.
	12	Reapp.	45 Leonis	E. Eq.	140	,,	51 5·64	A. D.
	12	Disapp.	ρ Leonis	E. Eq.	140	Bright	11 29 41·02	A. D.
	12	Reapp.	ρ Leonis	E. Eq.	140	Dark	12 30 15·02	A. D.
	28	Disapp.	4 Ceti	E. Eq.	140	,,	7 15 40·91	A. D.
	28	,,	4 Ceti	Altaz.	100	,,	7 15 40·79	S. D.
	28	,,	5 Ceti	E. Eq.	140	,,	7 42 3·78	A. D.
	28	,,	5 Ceti	Altaz.	100	,,	7 42 4·38	S. D.
Feb.	2 (*c*)	,,	48 Tauri	E. Eq.	60	,,	13 14 16·33	L.
	6	,,	3 Cancri	Altaz.	100	,,	9 17 15·72	H. T.
	6	,,	3 Cancri	E. Eq.	210	,,	9 17 14·89	L.